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E05F 1/00, E05D 13/00

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(56) Documents Cited

GB 2338979 A	GB 2338978 A	GB 2336385 A
GB 1241711 A	GB 1008217 A	GB 0676930 A
EP 0276650 A1	WO 94/19572 A1	US 5331765 A
US 3945149 A		

(58) Field of Search

UK CL (Edition R) E1J JFA
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15/22 15/24, E05F 1/00 1/02 1/04, E05G 7/00
Online: WPI, EPODOC, JAPIO

(54) Abstract Title

Vertical sliding sash windows with movement ratio conversion unit

(57) A sliding sash window has a pair of panels 2 sliding in a frame 1, the panels being connected by a cable so that movement of one causes a corresponding movement of the other. The usual operating ratio is 2:1 but, at a selected point, this is changed to 1:1 by a ratio conversion unit 5, which changes the position of the inner panel cable anchor point 4 thus balancing both window panels and eliminating the use of counterweights. The ratio conversion unit 5 may comprise a main body 9, on a mounting bracket 8, a cable pulley 6, and an anchor point 4 mounted on a movable pin 10 tensioned by spring 7.

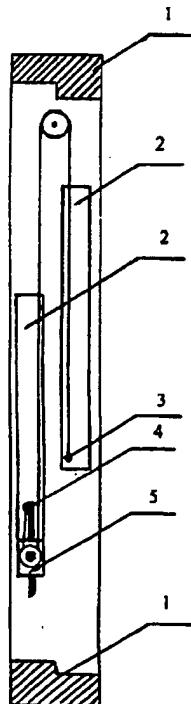


FIGURE 1.

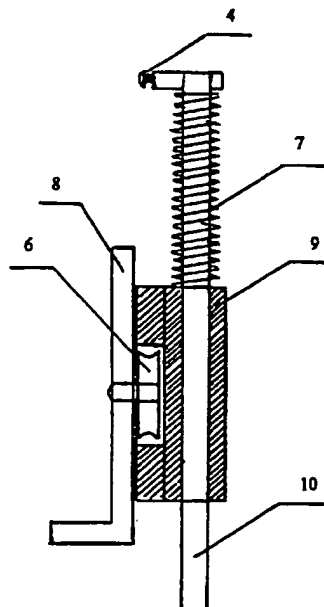


FIGURE 2

GB 2 343 213 A

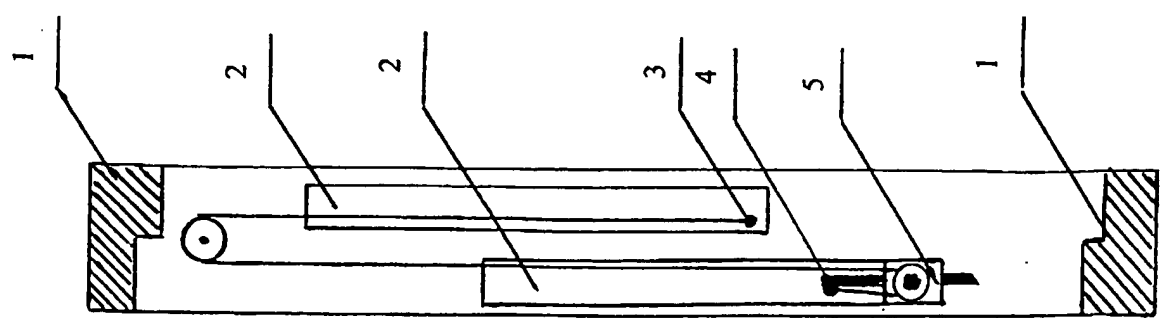


FIGURE 1.

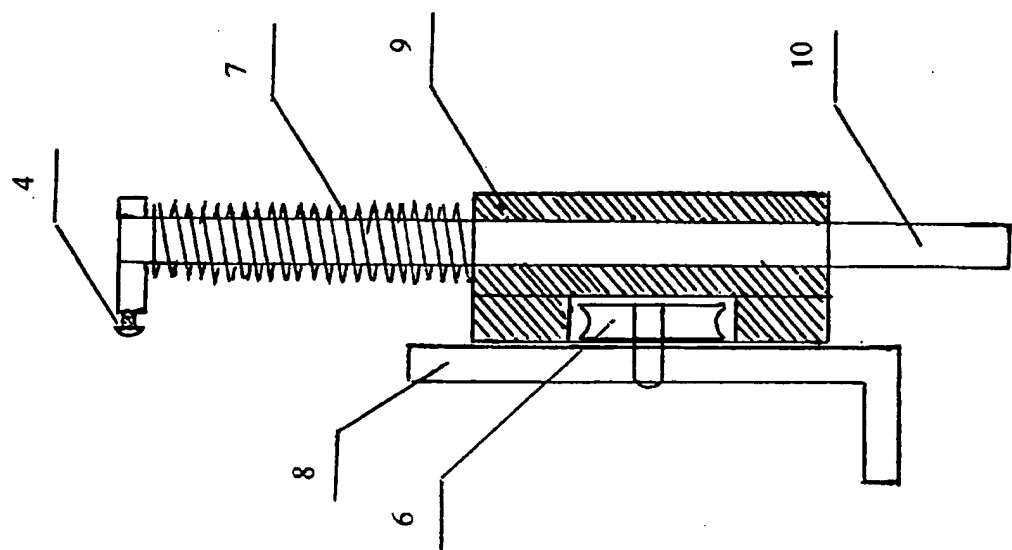


FIGURE 2

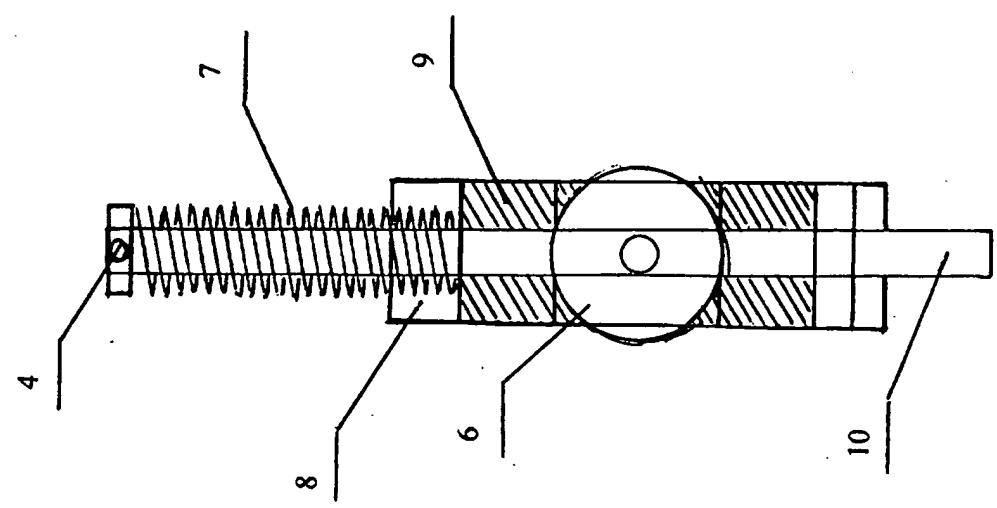


FIGURE 3.

1.

RATIO CONVERSION UNIT FOR VERTICAL SLIDING SASH WINDOWS.

Sash window arrangement includes a pair of window panels slidable in a frame and being connected together with cable ties whereby movement of one causes a corresponding movement in the opposite direction of the other and being at 2:1 ratio in any relative position of the two panels. Such device is disclosed in UK Patent Application GB 2338978 A, and is being used at present. The problem with some window arrangements is that counterbalance weights have to be added in to the window panel or other suitable place. In some window arrangements it is difficult to do it.

It is the object of present invention to provide a very simple and inexpensive arrangement for sash windows which avoids or at least minimises difficulties referred to above.

According to the invention the ratio conversion unit will at selected positions change the present 2:1 ratio to a temporary 1:1 ratio during upward movement of the inner window panel and counter balance the window panels. By moving the inside window panel down to close position the conversion unit will at given position change the window panels movement back to 2:1 ratio. This ratio changing ability during opening and closing of vertical sliding sash windows will eliminate in certain applications use of counter balances.

EMBODIMENT OF THE INVENTION.

An embodiment of the invention is described below with reference to the accompanying drawings, in which

FIGURE 1 is a side view of sash window incorporating arrangement according to the invention.

FIGURE 2 is a side view of the ratio conversion unit.

FIGURE 3 is a front view of the ratio conversion unit.

Referring first to Figure 1 a sash window includes a frame 1 and two window panels 2. A cable is anchored at lower level of outer panel 3 and runs over set of pulleys to inner panel second anchor point 4 which is part of the ratio conversion unit 5.

Referring to Figure 2 is detailed side view of the ratio conversion unit 5, where 4 is cable anchor point, 7 tension spring, 9 main body of the conversion unit, 6 cable pulley, unit mounting bracket at 8 and movable pin as 10.

Referring to Figure 3 is detailed front view of the ratio conversion unit 5 as described in previous paragraph.

A sash window at closed position will have a movable pin 10 at level position with bottom part of mounting bracket 8. By moving inner window panel upwards the weight of the outer panel will keep pin 10 in close position and both panels will move opposite direction of each other at ratio 2:1. At selected position spring 7 will become fully compressed and by moving inner panel further upward the ratio will change to 1:1. By moving inner window opposite direction (down) panels will move at ratio 1:1 to the position where pin 10 will touch bottom part of window main frame 1. At this point ratio will change to 2:1 until the window panels are at fully closed position.

3.

CLAIMS.

1. A sash windows arrangement includes a pair of window panels slidable in a frame at the ratio of 2:1, where by including the ratio conversion unit which change the ratio from 2:1 to 1:1 at a selected position of the window panels during of the panels up or down in the main window frame by moving the position of the inner panel anchor point of the connecting cable.
2. The arrangement as claimed in claim 1 whereby the weight of the outer window panel is used to counterbalance the operation of the ratio conversion unit.
3. The arrangement as claimed in claim 2 where the position of the anchor point of the inner panel will change when inner window panel is moved up or down in the main window frame.



Application No: GB 0002791.2
Claims searched: 1-3

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Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

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Int Cl (Ed.7): E05D: 13/00, 15/00, 15/10, 15/16, 15/18, 15/20, 15/22, 15/24.

E05F: 1/00, 1/02, 1/04.

E05G: 7/00.

Other: Online: WPI, EPODOC, JAPIO.

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB2338979A (CHARVAT)	
A	GB2338978A (CHARVAT)	
A	GB2336385A (CHARVAT)	
A	GB1241711A (P.H. PLASTICS)	
A	GB1008217A (EVERSHED)	
A	GB0676930A (PERRY et al.)	
A	EP0276650A1 (SIPOIT)	
A	WO94/19572A1 (HERSKIND & HARILD)	
A	US5331765A (DUPUIS et al.)	
A	US3945149A (BOUCHER)	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.